

FORETELL

Evaluation of the FORETELL Field Operational Test: Weather Information for Surface Transportation

When weather turns wintry with snow and ice, it can be deadly. Over 17 percent of all fatal crashes occur during winter weather conditions. Of those, 60 percent happen in rural areas (most on non-interstate roadways). Knowing that more accurate and accessible weather information could improve road maintenance and decrease fatal crashes, the Federal Highway Administration (FHWA) supported the development of an operational test of a multi-regional road and weather forecasting/dissemination system. This system, known as FORETELL™, has been developed by Castle Rock Consultants and the Iowa, Wisconsin, and Missouri Departments of Transportation. The U.S. DOT funded operational test in Iowa, Wisconsin, and Missouri has been completed. However, FORETELL continues as a private sector service in Iowa and is now being assessed in the Northeast states of Maine, New Hampshire, and Vermont.

What is FORETELL?

FORETELL is an Internet site that provides weather and road condition information for winter maintenance managers and other user groups. FORETELL provides decision makers with advanced weather up to 24 or 30 hours in advance, i.e., forecasts of what will happen later in the day, overnight, and the next day, with updates every 6 hours. Nowcasts are available approximately half past each hour so that users can see actual weather conditions. FORETELL gathers weather information from a variety of sources, including National Weather Service models, agricultural sensors, airport weather sensor sites, and road weather information system (RWIS) sensors, and processes/formats the information specifically for use by targeted user groups.

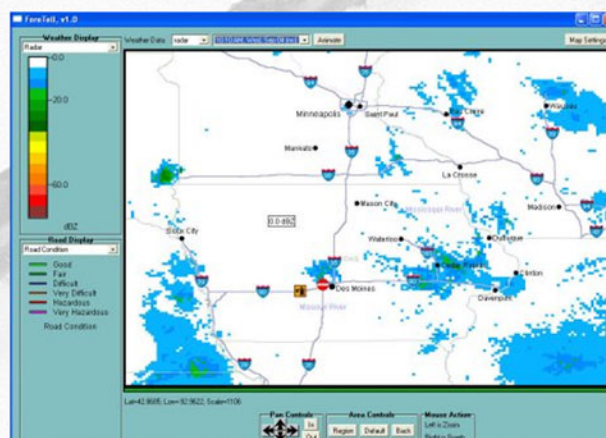
FORETELL is a map-based system that allows the user to select and view the following weather and road condition parameters within an area:

Weather Information

- Wind Speed and Direction
- Cloud Thickness
- Precipitation/Temperature
- Pressure
- Dewpoint and Humidity
- Radar Depiction
- Accumulation

Road Condition Information

- Road Condition
- Pavement Temperature
- Air Temperature at Surface
- Dewpoint at Surface
- Road Freeze Point
- Road Snow Depth
- Decision Support
- Snow Drift
- Pavement Frost



FORETELL Independent Evaluation Results

An independent evaluation was conducted by Battelle Memorial Institute, supported by Meyer, Mohaddes Associates and Weather Solutions Group. Primarily via surveys of various user groups, the evaluation focused on user acceptance and resulting decision effectiveness from the use of FORETELL. The evaluation surveyed highway maintenance operators (HMOs) soon after the winters of 2000-2001 and 2001-2002. Additionally, other user groups were surveyed soon after the winter of 2001-2002, including commercial vehicle operators (CVOs), highway patrol personnel, school administrators, transit operators, and a traffic manager. The evaluation was conducted on a new system which underwent continued development during the evaluation period, and therefore the evaluation results are considered preliminary. However, the following findings suggest a continued interest by these user groups in having access to advanced road weather information. Such findings have been useful to FHWA supporting program activities, such as the Maintenance Decision System and 511.

FORETELL offered new information in a new format. FORETELL packaged weather and road condition information in a one-stop-shop website format with special features, such as time animation, to assist in viewing a large quantity of information. Although HMOs could obtain this information from multiple sources in the past, they noted the value in receiving it in one location and found the dewpoint (new to many), in particular, to be of great value. Other users found that FORETELL provided new information in a new format and specifically appreciated receiving weather forecasts and pavement temperature and conditions.

The majority of respondents in each user group agreed that FORETELL information is easily attainable, understandable, and useful. Ranging from 45% to nearly 100% of respondents in different user groups reported easy access, understandability and usefulness of the FORETELL information. These system attributes supported the use of FORETELL information by all user groups to make operational decisions.

Approximately 30-40 percent of HMOs reported that they changed their highway maintenance decisions based on FORETELL information. This was a significant finding, given the natural reluctance of users to rely on new weather information products. Assuming these changed decisions resulted in a positive outcome, FORETELL could have a significant impact on improving the efficiency and effectiveness of winter highway maintenance operations. Interestingly, CVOs did not think FORETELL would change their key decisions (when to go, if to go, where to go), as their motivation to deliver products to a market destination was the most important decision criterion.

The majority of all users stated that they want to use FORETELL in the future. Greater than 50% of all users said they wanted to continue using FORETELL; however, less than 20% were willing to pay for the service. The state of Iowa is continuing to use FORETELL as an information source to support efficient winter highway maintenance operations. The states of Maine, New Hampshire, and Vermont have begun to use FORETELL in a similar way.

For More Information, Please Contact:

U.S. Department of Transportation, Federal Highway Administration
Road Weather Management Program
Attn: Paul Pisano
400 Seventh Street, SW (HOTO-1), Room 3408
Washington, DC 20590
paul.pisano@fhwa.dot.gov
(202) 366-1301
www.ops.fhwa.dot/weather
FHWA-OP-03-143



U.S. Department
of Transportation

Federal Highway
Administration

WWW.FORETELL.COM